WHAT IS CLAIMED IS:

1. A nonvolatile semiconductor memory device comprising:

a plurality of nonvolatile memory elements formed on element regions respectively isolated by element isolation regions on a main surface of a first conductive type semiconductor substrate;

the nonvolatile semiconductor memory elements comprising:

a gate insulating film formed on the main surface of the semiconductor substrate;

a plurality of floating electrodes formed along a first direction on the gate insulating film;

a plurality of grooves formed among said plurality of floating electrodes;

groove insulating films filled in said plurality of the grooves;

a second conductive type impurity diffusion region formed along a second direction so as to sandwich the floating electrodes;

interelectrode insulating films formed along the first direction on the plurality of floating electrodes and the groove insulating films; and

control electrodes formed on the interelectrode insulating films.

2. The nonvolatile semiconductor memory device according to claim 1, wherein the groove insulating

films filled in the groove is formed of the same insulating material as the interelectrode insulating film.

3. The nonvolatile semiconductor memory device according to claim 1, wherein the groove insulating films filled in the groove is formed of an insulating material which is different from that of the interelectrode insulating film.

4. The nonvolatile semiconductor memory device according to claim 1, wherein a width of the groove is less than or equal to 1.6 times a film thickness of the interelectrode insulating film.

5. The nonvolatile semiconductor memory device according to claim 1, wherein the interelectrode insulating film and the groove insulating film includes at least one of an ONO insulating film, a silicon oxide film, and a silicon nitride film.

6. The nonvolatile semiconductor memory device according to claim 1, wherein the groove insulating film is formed of a first insulating film having a low dielectric constant, and the interelectrode insulating film is formed of a second insulating film having a high dielectric constant.

7. The nonvolatile semiconductor memory device according to claim 6, wherein the first insulating film is formed so as to include at least one of SiO_2 and SiO_2 having a low dielectric constant.

8. The nonvolatile semiconductor memory device according to claim 6, wherein the second insulating film includes at least one of Al_2O_3, Ta_2O_5, and an ONO insulating film.

9. The nonvolatile semiconductor memory device according to claim 6, wherein the interelectrode insulating film is formed on the first insulating film along the first direction on the groove insulating film and the plurality of floating electrodes, and the second insulating film formed on the first insulating film.

10. The nonvolatile semiconductor memory device according to claim 6, wherein the element isolation film is formed of the first insulating film, and has a plurality of floating electrodes isolated by the first insulating film, and the second insulating film is formed on top surfaces of the first insulating film and said plurality of floating electrodes.

11. The nonvolatile semiconductor memory device according to claim 1, wherein said plurality of floating electrodes have a two-layer structure which is formed of a first floating electrode layer formed on the gate insulating film, and a second floating electrode layer formed on the first floating electrode.

12. The nonvolatile semiconductor memory device according to claim 11, wherein both ends of the second floating electrode layer are formed so as to project

into an interior of the element isolation film along the first direction.

13. The nonvolatile semiconductor memory device according to claim 10, wherein the top surface of the first insulating film is formed so as be higher than a top surface of the plurality of floating electrodes.

14. A method of manufacturing a nonvolatile semiconductor memory device, comprising:

forming at least first and second element forming regions isolated by element isolation regions on a main surface of a first conductive type semiconductor substrate;

forming first and second gate insulating films within the first and second element forming regions, respectively;

forming first and second floating electrodes respectively on the first and second gate insulating films in a state of being isolated by grooves on the element isolation regions;

forming a groove insulating film having the substantially same thickness as the first and second floating electrodes, in the groove;

forming an interelectrode insulating film on the groove insulating film and on the first and second floating electrodes; and

forming control electrodes so as to extend over

the first and second floating electrodes on the interelectrode insulating film.

15. A method of manufacturing a nonvolatile semiconductor memory device, comprising:

depositing a gate insulating layer on a main surface of a semiconductor substrate;

depositing a first floating electrode layer on the gate insulating layer;

patterning the first floating electrode layer and the gate insulating layer, thereby forming a gate insulating film and a first floating electrode;

making an element isolation groove in the semiconductor substrate;

filling the element isolation groove with an element isolation film, forming an element isolation region;

forming a second floating electrode layer on the first floating electrode and element isolation film;

patterning the second floating electrode layer, making an insulating groove in the second floating electrode and thus forming two second floating electrodes on the first floating electrode, which are isolated form each other;

forming a groove insulating film which fills up the insulating groove;

depositing an interelectrode insulating layer on the groove insulating film and the second floating

electrodes;

depositing a control electrode layer on the interelectrode insulating layer; and

patterning the control electrode layer, thereby forming control electrodes, each on the groove insulating film and the second floating electrode.

16. The method of manufacturing a nonvolatile semiconductor memory device, according to claim 15, further comprising:

after patterning the control electrode layer, thereby forming control electrodes, each on the groove insulating film and the second floating electrode, forming a gate side wall insulating film at side surfaces, which are exposed by the patterning, of the control electrodes, the interelectrode insulating layer, the second floating electrode, and the first floating electrode.

17. The method of manufacturing a nonvolatile semiconductor memory device, according to claim 15, further comprising:

after patterning the second floating electrode layer, making an insulating groove in the second floating electrode and thus forming two second floating electrodes on the first floating electrode, which are isolated form each other, simultaneously forming the groove insulating film and the interelectrode insulating layer such that the insulating groove is

buried.

18. The method of manufacturing a nonvolatile semiconductor memory device, according to claim 15, further comprising:

after patterning the second floating electrode layer, making an insulating groove in the second floating electrode and thus forming two second floating electrodes on the first floating electrode, which are isolated form each other, forming a first insulating film whose dielectric constant is low such that the insulating groove is buried; and

forming a second insulating film whose dielectric constant is high on the first insulating film and on the second floating electrodes.

19. The method of manufacturing a nonvolatile semiconductor memory device, according to claim 15, further comprising:

after patterning the second floating electrode layer, making an insulating groove in the second floating electrode and thus forming two second floating electrodes on the first floating electrode, which are isolated form each other, simultaneously forming the groove insulating film and the interelectrode insulating layer by the first insulating film such that the insulating groove is buried; and

forming the second insulating film on the first insulating film.

20. The method of manufacturing a nonvolatile semiconductor memory device, according to claim 15, further comprising:

after making an element isolation groove in the semiconductor substrate, forming an element isolation region by filling the first insulating film in the interior of the element isolation groove; and

forming the second insulating film on the first floating electrode and on the first insulating film.

21. The method of manufacturing a nonvolatile semiconductor memory device, according to claim 15, further comprising:

after making an element isolation groove in the semiconductor substrate, forming an element isolation region by filling the first insulating film in the interior of the element isolation groove;

eliminating one portion of both ends of the first insulating film;

forming, in a self-aligned manner, second floating electrodes which is formed so as to project to an eliminated interior of the first insulating film, by depositing a second floating electrode layer on the first insulating film and the first floating electrode; and

forming the second insulating film on the first insulating film and the second floating electrodes.

22. The method of manufacturing a nonvolatile

semiconductor memory device, according to claim 15, further comprising:

after making an element isolation groove in the semiconductor substrate, forming an element isolation region by filling the first insulating film in the interior of the element isolation groove;

depositing a second floating electrode layer so as to sandwich the first insulating film on the first floating electrode;

forming two second floating electrodes such that a top surface of the first insulating film is higher than a top surface of the second floating electrodes; and

forming the second insulating film on the first insulating film and the second floating electrodes.